

# **FOLD OUT SEAT ASSEMBLY**

## **Cross Reference To Related Application**

[0001] This application is a voluntary divisional of pending United States patent application Serial No. 10/125,706 filed 04/18/2002, entitled "Fold Out Boat Seat," and which will issue as United States Patent No. 6,647,916 on November 18, 2003.

## **Background of the Invention**

[0002] The present invention is directed to a stowable fold out seat assembly for a passenger carrying vehicle with a passenger carrying boat being used as an illustrative example. More particularly, the present invention relates to a bench seat boat assembly that can be folded and stored against a supporting structure illustrated as a bulkhead of a boat, when not in use and whose seat unit can be detached and removed from the bulkhead when not needed.

[0003] As the boat industry has been more family oriented, multi-purpose seating apparatus has become increasingly important. It is well known in the boat industry to provide, for example, combination seating/storage or seating/bed apparatus and which make efficient use of the limited space available aboard boats. In seating/storage apparatus, a separable lid is placed over a container. The lid serves both as a top for the container and as a seat for a passenger. The lid is often upholstered to improve the aesthetic appearance of the apparatus and increase comfort for the passenger. The lid may also be hinged to allow the lid to pivot about an edge and ultimately rest against a backrest of the seating/storage apparatus.

[0004] Fishing boats often have a limited amount of open space in which the fisherman is free to move from port to starboard and stern to bow while fishing. As described above, each seat provided around the deck of the boat may include a storage area provided beneath a seat surface. Moreover, each seat may be a stationary and closed structure formed integrally with the deck and the bulkhead. While conventional seat structures serve useful purposes, they often times interfere with a fisherman's ability to move about quickly from one position to another while

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fishing. It is particularly undesirable to have a permanent seat fixed in its sitting position with the horizontal part of the seat coming out from the bulkhead because it takes up too much room. Therefore, in order to provide a seat in a limited amount of space, while making it big enough to sit on, the seat ordinarily does not have a backrest. If the seat is made low enough to sit on, the seat width gets too short. Thus, the present invention recognizes that the ideal seat needs to be able to be stowed against the boat bulkhead and be big enough in both its back and seat portion to be comfortable for the user.

[0005] While it has been known to provide seats on a boat which can be folded out to provide a bench-like seat, such fold-out, bench-type seats of conventional construction lack the many advantages of the present invention as set forth below.

[0006] Accordingly, there is a need in the art of fishing boat manufacture for a seating apparatus which when not being used is adapted to be stowed in a manner to provide a maximum amount of deck space for fishing activities.

[0007] There is a further need for an improved seating apparatus which when placed in either its stowed or seating position tends to maintain and not inadvertently move out of such position.

[0008] With the above in mind, it is an object of the present invention to provide a fold-out, bench-type boat seat that is economical to manufacture, simple to operate, and is aesthetically pleasing to the boat user.

[0009] A further object of the present invention is to provide a fold-out, bench-type boat seat that, when not needed for seating, may be folded into a stowed position and made to reside fixed against the bulkhead of the boat out of the fisherman's way.

[0010] A still further object of the present invention is to provide a fold-out, bench-type boat seat that both preserves storage space within the bulkhead and yet makes accessible any space behind the seat locations where there might be, for example, a storage compartment, thus solving a significant problem and a need of the boat industry.

[0011] Also, an object of the present invention is to provide a fold-out, bench-type boat seat assembly whose seat unit is removable so one can easily detach the seat unit from the boat and leave it at the dock if so desired.

[0012] Other objects and advantages of the invention will be more fully apparent from the following disclosure and appended claims.

## Summary of the Invention

[0013] The present invention provides a fold-out, bench-type seat assembly that is attached to a support structure illustrated as comprising the bulkhead of a passenger carrying boat. The seat comprises two sections: a back support that is fixedly attached to the bulkhead, and a seat unit detachably mounted in a pair of laterally spaced vertical slide blocks fixedly attached to the bulkhead and movable from a vertical stowed position against the boat bulkhead to a horizontal seating position.

[0014] The present invention and its features and advantages will be more fully understood, and further features and advantages will become apparent, when reference is made to the following detailed description of the invention, including the drawings, and the claims.

## Brief Description of the Drawings

[0015] Figure 1 is a perspective view of a fold-out, bench-type boat seat assembly according to the preferred embodiment of the present invention with the seat unit in a folded out seating position.

[0016] Figure 2 is a front elevation view of the fold-out, bench-type boat seat assembly of Figure 1 with the seat in a folded out seating position.

[0017] Figure 3 is a section view taken substantially along line 3-3 of Figure 2.

[0018] Figure 4A is an enlarged perspective view of one of a pair of slide blocks employed in the present invention.

[0019] Figure 4B is a right side elevation view of the slide block of Figure 4A.

[0020] Figure 4C is a front elevation view of the slide block of Figure 4A.

[0021] Figure 5 is a perspective view of the fold-out, bench-type seat assembly of Figure 1 but with the seat unit in a vertical stowed position.

[0022] Figure 6 is a perspective view similar to that of Figure 5 but with portions thereof broken away for illustrative purposes and with various hidden parts shown in dashed lines.

[0023] Figure 7 is a perspective view similar to that of Figure 1 but with portions thereof broken away for illustrative purposes and with various hidden parts shown in dashed lines, the seat unit being in a folded out seating position.

## Detailed Description

[0024] Referring to the drawings in detail, wherein like numerals indicate like elements, there is shown in Figures 1, 2, 3, 5, 6, and 7, a preferred embodiment of the fold-out, bench-type boat seat assembly 10 of the present invention and in Figures 4A, 4B, and 4C various component details.

[0025] Fold-out, bench-type boat seat assembly 10 comprises: a back support 11 that is typically fixedly attached to the bulkhead of a boat by suitable conventional means, e.g. bolts and screws (not shown) or by being formed integral with the boat bulkhead, and a seat 12 that works in conjunction with back support 11 but that is movable from a horizontal seating position (as in Figure 1) to a vertical stowed position (as in Figure 5).

[0026] The novelty of the present invention resides primarily in the seat unit and its associated mounting and folding mechanisms. In this regard, a pair of vertically mounted, laterally spaced slide blocks 15a, 15b (see Figures 4A, 4B, 4C for details of representative block 15a) are fixedly secured to the boat bulkhead by suitable bolts and screws (not shown) passing through holes 22a, 22b of left block 15a and holes 22c, 22d passing through right block 15b. Blocks 15a, 15b are adapted to receive, by way of a pair of insertion ports 16a, 16b (Figure 2) respectively the opposed ends 13a, 13b of a slide rod 13.

[0027] Slide rod 13 is integrally and rigidly secured to the bottom portion 12a of seat 12 adjacent the rear thereof by studs 24 which are integrally secured in bottom 12a of seat 12. Once ends 13a, 13b of rod 13 are passed through insertion ports 16a, 16b respectively, opposed rod ends 13a, 13b (Figure 7) ride up or down within slide grooves 18a, (Figure 4A), 18b (not shown) of slide blocks 15a, 15b. Thus, seat 12 can be moved up or down as opposed rod ends 13a, 13b move up or down in slide grooves 18a, 18b respectively. When in a down position so that fold-out, bench-type boat assembly 10 is useful as a seat, rod ends 13a, 13b respectively rest in stop

blocks 19a (Figure 4A), 19b (Figure 6) of slide blocks 15a, 15b. Hence, seat 12 is effectively locked when in a down position.

[0028] Reference is next made to Figures 1, 5, 6, and 7 and the fold-out, bench-type boat seat assembly 10 illustrated therein. Seat 12 comprises a front portion 12a, two opposed side portions 12b, 12c, a rear portion 12d, and a bottom portion 12e. Seat 12 is supported under its front portion by a U-shaped frame or support 14. U-shaped frame or support 14 comprises a pair of side arms 14a, 14b (Figure 2) and an intermediate front cross bar 14c. Arms 14a, 14b and cross bar 14c are interconnected and designed in such a way as to eliminate a "pinch point" between the support 14 and seat bottom position portion 12e during raising and lowering of seat assembly 10. Side arms 14a, 14b are attached at their respective inner ends to the boat bulkhead by a pair of pivoting connectors 21a, 21b which are integrally secured to the boat bulkhead by bolts and screws (not shown). Side arms 14a, 14b have integral with their respective inner ends a pair of hinge connectors 21c, 21d (Figures 2 and 6) which are pivotally attached to pivoting connectors 21a, 21b (Figure 2) by a pair of respective hinge pins 21e, 21f.

[0029] As previously described, seat 12 is detachably mounted to the boat bulkhead on each side by slide rod ends 13a, 13b (see Figure 7) that sit inside slide blocks 15a, 15b respectively, one on each side of seat 12 and which are fixedly attached to the bulkhead. Seat 12 is adapted to be folded up and against the boat bulkhead when not in use (see Figure 5) and being retained there. The intermediate front crossbar 14c of U-shaped frame 14 which supports the outermost portion of seat 12 is loosely received by a pair of front crossbar brackets 26a, 26b secured to the bottom portion 12e of seat 12 (Figures 2 and 7). When it is desired to fold up seat 12 into the Figure 5 position, the rear 12d of seat 12 is lifted and pivoted upward by the boat user as it is being guided by slidable rod ends 13a, 13b inside their respective slide blocks 15a, 15b. The front 12a of seat 12 and U-shaped frame 14 pivot downwardly until seat 12 is essentially flat against the bulkhead directly beneath back support 11. Front crossbar brackets 26a, 26b allow front cross bar 14c to be snap fitted therein which allows seat 12, when not in use, to rest in place against the front surfaces of slide blocks 15a, 15b mounted on the boat bulkhead. This arrangement permits more space in the boat when seat 12 is not in use and still allows access to and use of the boat bulkhead area behind the seat. As previously mentioned, the design and arrangement of frame

14 avoids establishing a “pinch point” between frame 14 and seat bottom portion 12 during raising and lowering of the seat assembly 10.

[0030]        Seat 12 has a rigid, stiffener 25 (Figure 6) integrally secured by screws 25a to bottom portion 12e thereof. Stiffener 25 adds rigidity to seat 12. Seat stiffener 25 is of sufficient length such that when seat 12 is moved into its raised stowed position, stiffener 25 resides between slide blocks 15a, 15b with seat bottom portion 12e resting against the front surfaces of slide blocks 15a, 15b.

[0031]        Seat assembly 10 permits more space in the boat when the seat is not in use and still allows access to and use of the area behind the seat, inside the bulkhead, for storage of items, e.g. clothing, fishing gear, etc., if desired. It also solves the need to preserve boat floor area for movement of the fisherman. This type of bench seat arrangement may be useful in other settings where a foldable seat is needed to preserve other storage areas. Further, seat 12 can be removed and stored when it is not needed for use as a seat. For removal of seat 12, the boat user need only snap front crossbar 14c of U-shaped frame 14 from front crossbar brackets 26a, 26b. Then, rear seat portion 12d of seat 12 is raised at the rear thereof thus allowing slide rod ends 13a, 13b of rod 13 to be moved upwards in their respective slide blocks 15a, 15b until they are aligned with their respective insertion ports 16a, 16b. At this point, slide rod ends 13a, 13b are moved outward from their respective slide blocks 15a, 15b. Thus, seat 12 is free to be removed and stored in a suitable place. Only back support 11, U-shaped frame 14, associated bulkhead pivoting connectors 21a, 21b, and slide blocks 15a, 15b are left remaining substantially flush against the boat bulkhead out of way of the fisherman. Frame 14 may also be removed simply by removing the pins 21e, 21f.

[0032]        In summary, when compared to boat seat and seat assemblies of the prior art, the fold out boat seat assembly of the invention offers the following advantages, among others:

- (a).    When in a stored position, the assembly takes up virtually no space inside the boat.
- (b).    The assembly can be mounted on any flat or substantially flat, vertical or substantially vertical bulkhead or other surface.

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- (c) The assembly can be mounted below an existing bolster of normal size and fit within the confines of the bolster.
- (d) The assembly requires no new boat tooling in order to integrate the assembly into virtually any of the multitude of boat designs found in the industry.
- (e) The assembly can be mounted on the bulkhead or other appropriate surface in a position such that it does not extend to the floor of the boat and thus provides access to the space below the assembly in either its stored or open position.
- (f) When the assembly is in its stored position, there is virtually no reduction in either cockpit space or fishing room.
- (g) Access to any storage area or stored items such as a fishbox or cooler located behind the bulkhead surface on which the assembly is mounted are still accessible.
- (h) By reason of the major parts of the assembly being removable without the use of tools, access to pumps, fuel fittings, batteries and other items located near where the assembly is mounted remain accessible.
- (i) Since the vertical slide rails of the assembly can be installed on any flat surface, the assembly, when used on a molded boat, does not require mold modification.

[0033] The above detailed description of a preferred embodiment of the invention sets forth the best mode contemplated by the inventor for carrying out the invention at the time of filing this application and is provided by way of example and not as a limitation. Accordingly, various modifications and variations obvious to a person of ordinary skill in the art to which it pertains are deemed to lie within the scope and spirit of the invention as set forth in the following claims.